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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,813	06/14/2006	Charles Ahn	26068-27B	8666
34238 7590 06/15/2009 ARTHUR G. SCHAIER CARMODY & TORRANCE LLP 50 LEAVENWORTH STREET P.O. BOX 1110 WATERBURY, CT 06721				
EXAMINER NGUYEN, DAO H				
ART UNIT 2818		PAPER NUMBER		
MAIL DATE 06/15/2009		DELIVERY MODE PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

# Office Action Summary

**Application No.**

10/582,813

**Applicant(s)**

AHN ET AL.

**Examiner**

DAO H. NGUYEN

**Art Unit**

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 April 2009.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12-16, 18-19, 21-30, 32, 33, 35-48 is/are pending in the application.  
4a) Of the above claim(s) 18, 19, 37 and 38 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 12-16, 21-30, 32, 33, 35, 36 and 39-48 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 04/07/2009  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

1. This Office Action is in response to the communication(s) dated 04/07/2009  
Claims 12-16, 21-30, 32, 33, 35, 36, 39, and 40-48 are active in this application.  
Claim(s) 1-11, 17, 20, 31, 34, and 49-56 have been cancelled.  
Claims 18-19 and 37-38 have been withdrawn from consideration as being  
directed to non-elected species.

### **Acknowledges**

2. Receipt is acknowledged of the following items from the Applicant.  
Information Disclosure Statement (IDS) filed on 04/07/2009. The references  
cited on the PTOL 1449 form have been considered.  
Applicant is requested to cite any relevant prior art if being aware on form PTO-  
1449 in accordance with the guidelines set for in M.P.E.P. 609.

### **Claim Objection**

3. The claim is objected to for the following reason: Claims 32 and 43 depend on  
cancelled claim 31. Appropriate corrections are required.

### **Remarks**

4. Applicants' arguments have been fully considered but are not persuasive.

First, Applicants argued that none of the prior art cited, alone or in combination, described or suggest the feature of a conductive film positioned directly above and directly below the active area of the magnetic sensor. Such argument is not considered having patentable weight because the features upon which applicant relies (i.e., conductive film positioned directly above, directly below the active area of the magnetic sensor) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

As shown in Taguchi fig. 17, conductive films 5 are deposited parallel to the second pair of conductive leads 2 and above the active region 1; and conductive films 4 are deposited parallel to the first pair of conductive leads 3 and below the active region 1. Moreover, in Embodiment 2, described on col. 8, lines 35-45, by using a mask or the like, similar to Embodiment 1, the following films are formed in the following order on a silicon substrate:

Recording line 4	1 $\mu\text{m}$ thick
Insulating film	0.1 $\mu\text{m}$ thick
Current lines and voltage line	0.5 $\mu\text{m}$ thick
Magnetic thin film memory element	0.05 $\mu\text{m}$ thick
Insulating film	0.1 $\mu\text{m}$ thick
Recording line 5	1 $\mu\text{m}$ thick

According to this, the recording line or conductive line 4 is formed at the bottom, the recording line or conductive line 5 is formed on top, while the magnetic thin film memory element or active region 1 is interposed in the middle, and the insulating films (which is of SiN<sub>x</sub>, col. 7, line 67-col. 8, line 2) separate the conductive lines 4, 5 from the active region 1.

Second, Applicants argued that Van Dau and Taguchi teach different types of devices, therefore can not be shown to be combinable to anticipate or render obvious the claimed invention. This is not agreed.

It is recognized that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, one of ordinary skills in the art at the time the invention was made would be motivated to combine the inventions of Van Dau and Taguchi so that the Van Dau device would further include two conductive films, as conductive films 4, 5 taught by Taguchi, in order to better control the magnetization of the magnetic film, thereby a better performance device would be obtained. See col. 7, line 1-col. 8, line 33 of Taguchi.

Furthermore, both inventions of Van Dau and Taguchi are dealing with the magnetization directions in a magnetic element (Van Dau col. 1, lines 28, Taguchi

Abstract, col. 1, lines 56-62, and col. 2, lines 31-38). That is, the prior arts taught by Van Dau and Taguchi are analogous, hence they are obviously combinable.

### **Claim Rejections - 35 U.S.C. § 103**

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**6. Claim(s) 12, 16, 21-23 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Van Dau et al. (US 6,191,581) in view of Taguchi et al. (US 5,361,226).**

Regarding to claim 12, Van Dau discloses a planar Hall effect magnetic sensor, shown in figs. 1-4, 6, comprising:

an active area 1 comprising a magnetic film that exhibits both planar Hall effect and biaxial magnetic anisotropy (col. 3, lines 40-64);

a first pair of conductive leads 2-2' arranged on opposing sides of the active area 1 for driving electrical current across the active area 1 in a first direction (XX'); and

a second pair of conductive leads 3-3' arranged on opposing sides of the active area 1 in a second direction (YY') perpendicular to the first direction (XX') for measuring voltage across the active area 1 in the second direction. See further col. 2, line 8-col. 3, line 18.

Van Dau fails to disclose two conductive films deposited parallel to the first pair of conductive leads and the second pair of conductive leads and separated from the active area by one or more insulating layers, wherein said two conductive films are used to generate a magnetic field, and

wherein one of the conductive films is positioned above the active area of the magnetic sensor separated from the active area by a first insulating layer and the other conductive film is positioned below the active area of the magnetic sensor separated from the active area by a second insulating layer.

Taguchi discloses a magnetic thin film device, shown in figs. 11, 16, 17, comprising a magnetic thin film active area 11, 12, or 13 (fig. 11), a first pair of conductive leads 2a, 2b, or 2c on opposing sides of the active layer for driving electrical current across the active area in a first direction, and a pair of lead 3a, 3b, or 3c on opposing sides of the active layer for measuring voltage across the active area in a second direction perpendicular to the first direction (fig. 16). Taguchi further discloses two conductive films 4 and 5 (fig. 17) deposited parallel to the first pair of conductive leads 2 and the second pair of conductive leads 3 and separated from the active area by one or more insulating layers, wherein said two conductive films are used to generate a magnetic field, and

wherein one of the conductive films is positioned above the active area of the magnetic sensor (conductive film 5 is above the active area, fig. 17) separated from the

active area by a first insulating layer (silicon nitride, col. 7, line 67-col. 8, line 10) and the other conductive film (conductive film 4, fig. 17) is positioned below the active area of the magnetic sensor separated from the active area by a second insulating layer. See col. 7, line 1-col. 8, line 33. See also the above remarks

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Van Dau so that it would include two conductive films, as conductive films 4, 5 taught by Taguchi, in order to better control the magnetization of the magnetic film, thereby a better performance device would be obtained. See col. 7, line 1-col. 8, line 33 of Taguchi.

Regarding to claim 16, Van Dau/Taguchi discloses the magnetic sensor wherein the magnetic film 1 has two easy axes that are arranged perpendicular to each other and are aligned with the first pair of conductive leads 2-2' and the second pair of conductive leads 3-3'. See col. 3, lines 43-46 of Van Dau.

Regarding to claim 21, Van Dau/Taguchi discloses the magnetic sensor wherein the conductive film is selected from the group consisting of copper, aluminum, and gold. Col. 7, lines 54-67 of Van Dau.



Regarding to claims 22 and 23, Van Dau/Taguchi discloses the magnetic sensor comprising all claimed limitations, except for expressly stating that wherein the one or more insulating layers are selected from the group consisting of aluminum oxides, magnesium oxides, and strontium titanite. However, Van Dau/Taguchi does disclose that the insulating layer is a SiNx or the like (col. 7, line 67-col. 8, line 10 of Taguchi).

It would have been obvious to one having ordinary skill in the art at the time the invention was made that SiN insulating layer or the like taught by Taguchi could be replaced by an insulating layer such as aluminum oxides, magnesium oxides, or strontium titanite since they are well known high dielectric constant materials that one of ordinary skills in the art would have recognized the interchangeability among them. It would have been obvious that selecting a known material on the basis of its suitability for the intended use is just within the general skill of a worker in the art. *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 56USPQ2d 1305 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1316, 50 USPQ2d 1161, 1165 (Fed. Cir. 1999); *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc.*, 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998); *Lockheed Aircraft Corp. v. United States*, 193 USPQ 449, 461 (Ct. Cl. 1977); *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987). Furthermore, MPEP § 2144.07 states that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the

vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol; "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.). See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment.). See also MPEP § 2183.

**7. Claim(s) 13-15, 24-29 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Van Dau et al. (US 6,191,581) in view of Taguchi et al. (US 5,361,226), as applied to claim 12 above, and further in view of Manako et al. (US 5,721,654).**

Regarding to claim 13, Van Dau/Taguchi discloses the magnetic sensor comprising all claimed limitations, as discussed above. Van Dau/Taguchi does not specifically teach that the magnetic film is epitaxially grown on a perovskite single crystal; however, Van Dau/Taguchi does teach that the magnetic film 1 is formed on a substrate S (VanDau col. 3, lines 39-43); Although Van Dau/Taguchi is silent on the material of the substrate S, it would have been obvious to one having ordinary skill in the art at the time the invention was made that any conventionally suitable material could be used for the substrate of Van Dau/Taguchi.

Manako discloses a magnetic sensor, shown in figs. 1, 5-11, comprising a magnetic film 1 which is epitaxially grown on a perovskite single crystal substrate 2. See col. 3, lines 19-25; col. 5, lines 18-23.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select a perovskite single crystal substrate, as that of Manako, for the substrate S of Van Dau/Taguchi. Such selection would fully fulfill the invention of Van Dau/Taguchi without making any change in the spirit and/or scope of Van Dau/Taguchi invention. It would have been obvious that selecting a known material on the basis of its suitability for the intended use is just within the general skill of a worker in the art. *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 56USPQ2d 1305 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1316, 50 USPQ2d 1161, 1165 (Fed. Cir. 1999); *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc.*, 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998); *Lockheed Aircraft Corp. v.*

United States , 193 USPQ 449, 461 (Ct. Cl. 1977 ); Data Line Corp. v. Micro Technologies, Inc., 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987). Furthermore, MPEP § 2144.07 states that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol; "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.). See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment.). See also MPEP § 2183.

Regarding to claim 14, Van Dau/Taguchi/Manako discloses the magnetic sensor wherein the magnetic film 1 is deposited on the perovskite crystal in the shape of a cross having arm portions of approximately equal length, and the first pair of conductive leads 2-2' and the second pair of conductive leads 3-3' are coated on the arm portions of the magnetic film 1, wherein a middle portion of the magnetic film 1 is left uncovered by the conductive leads. See fig. 3 of Van Dau.

Regarding to claim 15, Van Dau/Taguchi/Manako discloses the magnetic sensor wherein the conductive leads are copper. See col. 5, lines 53-65 of Van Dau.

Regarding to claim 24, Van Dau/Taguchi/Manako discloses the magnetic sensor comprising all claimed limitation.

Note that the discussed invention is directed to a product wherein the claimed limitation is directed to a process. The process limitation(s) of how the magnetic film being formed has/have no patentable weight in claim drawn to structure. MPEP §2113 states that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). A "product by

process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue) and In re Marosi et al, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product by a new method is not patentable as a product, whether claimed in "product by process" claims or not.

Note that applicant has the burden of proof in such cases, as the above caselaw makes clear. See MPEP §2113.

Therefore, the recitation(s) in claims 24 is/are considered process(es) of making product and is/are given no patentable weight in a product-by-process claim and is/are thus non-limiting(s).

Regarding to claim 25, Van Dau/Taguchi/Manako discloses the magnetic sensor wherein the deposited film 1 has a thickness between about 4 nm and about 100 nm. See col. 3, lines 47-50 of Van Dau.

Regarding to claim 26, Van Dau/Taguchi/Manako discloses the magnetic sensor wherein the deposited film has a thickness between about 10 nm and about 50 nm. See col. 3, lines 47-50 of Van Dau.

Regarding to claim 27, Van Dau/Taguchi discloses the magnetic sensor comprising all claimed limitations, as discussed above. Although Van Dau/Taguchi is silent on the material of the magnetic thin film, it would have been obvious to one having ordinary skill in the art at the time the invention was made that any conventionally suitable material could be used for the magnetic thin film of Van Dau/Taguchi.

Manako discloses a magnetic sensor, shown in figs. 1, 5-11, comprising a magnetic thin film 1 of  $L_{1-x}A_xMO_3$  or  $La_{1-x}A_xMnO_3$ , wherein x ranges from 0.01-0.5 (col. 12, line 66-col. 13, line 16; see also col. 3, lines 19-25; col. 5, lines 18-23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select a magnetic thin film of  $L_{1-x}A_xMO_3$  or  $La_{1-x}A_xMnO_3$ , as that of Manako, for the magnetic thin film of Van Dau/Taguchi. Such selection would fully fulfill the invention of Van Dau/Taguchi without making any change in the spirit and/or scope of Van Dau/Taguchi. It would have been obvious that selecting a known material on the basis of its suitability for the intended use is just within the general skill of a worker in the art. *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 56USPQ2d 1305 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1316, 50 USPQ2d 1161, 1165 (Fed. Cir. 1999); *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc.*, 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998); *Lockheed Aircraft Corp. v. United States*, 193 USPQ 449, 461 (Ct. Cl. 1977); *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987). Furthermore,

MPEP § 2144.07 states that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol; "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.). See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment.). See also MPEP § 2183.



Regarding to claim 28, Van Dau/Taguchi/Manako discloses the magnetic sensor wherein the rare earth metal is lanthanum. See col. 12, line 66-col. 13, line 16; see also col. 3, lines 19-25; col. 5, lines 18-23 of Manako.

Regarding to claim 29, Van Dau/Taguchi/Manako discloses the magnetic sensor wherein the alkaline earth metal is selected from the group consisting of strontium, calcium, and barium. See col. 12, line 66-col. 13, line 16; see also col. 3, lines 19-25; col. 5, lines 18-23 of Manako.

**8. Claim(s) 30, 32, and 33 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Van Dau et al. (US 6,191,581) in view of Manako et al. (US 5,721,654).**

Regarding to claim 30, Van Dau discloses a magnetic bit cell for use in a planar Hall effect magnetoresistive random access memory (MRAM) device, shown in figs. 1-4, 6, the magnetic bit cell comprising:

an active area 1 comprising a magnetic film that exhibits both planar Hall effect and biaxial magnetic anisotropy (col. 3, lines 40-64);

a first pair of conductive leads 2-2' arranged on opposing sides of the active area 1 for driving electrical current across the active area in a first direction (XX'); and

a second pair of conductive leads 3-3' arranged on opposing sides of the active area 1 in a second direction (YY') perpendicular to the first direction for measuring

voltage across the active area in the second direction (see further col. 2, line 8-col. 3, line 18);

wherein the magnetic film being epitaxially grown on the single crystal so that easy axes of the thin film are perpendicular to each other. See col. 3, lines 40-46.

Van Dau further teaches that the magnetic film 1 is formed on a substrate S (VanDau col. 3, lines 39-43).

Van Dau is silent on whether the magnetic film is epitaxially grown on a perovskite single crystal so that the easy axes of the thin film are at a 45-degree angle relative to the direction of the current.

Manako discloses a magnetic sensor, shown in figs. 1, 5-11, comprising a magnetic film 1 which is epitaxially grown on a perovskite single crystal substrate 2. See col. 3, lines 19-25; col. 5, lines 18-23.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select a perovskite single crystal substrate, as that of Manako, for the substrate S of Van Dau/Taguchi. Such selection would fully fulfill the invention of Van Dau/Taguchi without making any change in the spirit and/or scope of Van Dau/Taguchi invention. It would have been obvious that selecting a known material on the basis of its suitability for the intended use is just within the general skill of a worker in the art. *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 56USPQ2d 1305 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1316, 50 USPQ2d 1161, 1165

(Fed. Cir. 1999); Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc., 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998); Lockheed Aircraft Corp. v. United States, 193 USPQ 449, 461 (Ct. Cl. 1977); Data Line Corp. v. Micro Technologies, Inc., 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987). Furthermore, MPEP § 2144.07 states that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol; "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.). See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic

brakes for performing the same function, albeit in a different environment.). See also MPEP § 2183.

Furthermore, similarly to what is discussed on page 17, lines 5-15 of the pending specification, in the invention of the prior art, col. 1, lines 29-67, Van Dau teaches that the voltage measurement, as well as the resistivity, are varying in accordance to the angle between the magnetization of the film and the measurement current.

Hence, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to determine which configuration would be best to ensure maximum sensitivity, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding to claim 32, Van Dau/Manako discloses the magnetic sensor wherein the magnetic film 1 is deposited on the perovskite crystal in the shape of a cross having arm portions of approximately equal length, and the first pair of conductive leads 2-2' and the second pair of conductive leads 3-3' are coated on the arm portions of the magnetic film 1, wherein a middle portion of the magnetic film 1 is left uncovered by the conductive leads. See fig. 3 of Van Dau.

Regarding to claim 33, Van Dau/Manako discloses the magnetic bit cell wherein the conductive leads are copper. See Van Dau col. 5, lines 53-65.

Regarding to claim 43, Van Dau/Manako discloses the magnetic sensor comprising all claimed limitation.

Note that the discussed invention is directed to a product wherein the claimed limitation is directed to a process. The process limitation(s) of how the magnetic film being formed has/have no patentable weight in claim drawn to structure. MPEP §2113 states that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)." A "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue) and In re Marosi et al, 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product by a new method is not patentable as a product, whether claimed in "product by process" claims or not.

Note that applicant has the burden of proof in such cases, as the above caselaw makes clear. See MPEP §2113.

Therefore, the recitation(s) in claims 24 and 44 is/are considered process(es) of making product and is/are given no patentable weight in a product-by-process claim and is/are thus non-limiting(s).

Regarding to claim 44, Van Dau/Manako discloses the magnetic sensor wherein the deposited film 1 has a thickness between about 4 nm and about 100 nm. See col. 3, lines 47-50 of Van Dau.

Regarding to claim 45, Van Dau/Manako discloses the magnetic sensor wherein the deposited film has a thickness between about 10 nm and about 50 nm. See col. 3, lines 47-50 of Van Dau.

Regarding to claim 46, Van Dau/Manako discloses the magnetic sensor comprising all claimed limitations, as discussed above. Although Dau/Taguchi is silent on the material of the magnetic thin film, it would have been obvious to one having ordinary skill in the art at the time the invention was made that any conventionally suitable material could be used for the magnetic thin film of Dau/Taguchi.

Manako discloses a magnetic sensor, shown in figs. 1, 5-11, comprising a magnetic thin film 1 of  $\text{La}_{1-x}\text{A}_x\text{MO}_3$  or  $\text{La}_{1-x}\text{A}_x\text{MnO}_3$ , wherein x ranges from 0.01-0.5 (col. 12, line 66-col. 13, line 16; see also col. 3, lines 19-25; col. 5, lines 18-23).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select a magnetic thin film of  $L_{1-x}A_xMO_3$  or  $La_{1-x}A_xMnO_3$ , as that of Manako, for the magnetic thin film of Dau/Taguchi. Such selection would fully fulfill the invention of Van Dau without making any change in the spirit and/or scope of Dau/Taguchi. It would have been obvious that selecting a known material on the basis of its suitability for the intended use is just within the general skill of a worker in the art. *Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 56 USPQ2d 1305 (Fed. Cir. 2000); *Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1316, 50 USPQ2d 1161, 1165 (Fed. Cir. 1999); *Chiuminatta Concrete Concepts, Inc. v. Cardinal Indus. Inc.*, 145 F.3d 1303, 1309, 46 USPQ2d 1752, 1757 (Fed. Cir. 1998); *Lockheed Aircraft Corp. v. United States*, 193 USPQ 449, 461 (Ct. Cl. 1977); *Data Line Corp. v. Micro Technologies, Inc.*, 813 F.2d 1196, 1 USPQ2d 2052 (Fed. Cir. 1987). Furthermore, MPEP § 2144.07 states that the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol; "Reading a list and selecting a known compound to meet known

requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle.” 325 U.S. at 335, 65 USPQ at 301.). See also *In re Leshin*, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); *Ryco, Inc. v. Ag-Bag Corp.*, 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment.). See also MPEP § 2183.

Regarding to claim 47, Van Dau/Manako discloses the magnetic sensor wherein the rare earth metal is lanthanum. See col. 12, line 66-col. 13, line 16; see also col. 3, lines 19-25; col. 5, lines 18-23 of Manako.

Regarding to claim 48, Van Dau/Manako discloses the magnetic sensor wherein the alkaline earth metal is selected from the group consisting of strontium, calcium, and barium. See col. 12, line 66-col. 13, line 16; see also col. 3, lines 19-25; col. 5, lines 18-23 of Manako.

**9. Claim(s) 35, 36, and 39-42 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Van Dau et al. (US 6,191,581) in view of Manako et al. (US**



**5,721,654), as applied to claim 30 above, and further in view of Taguchi et al. (US 5,361,226).**

Regarding to claim 35, Van Dau/Manako discloses the magnetic sensor comprising all claimed limitations, as discussed above, except for further comprising a first write bit line and a second write bit line electrically isolated from the magnetic bit cell by an insulating layer.

Taguchi discloses a magnetic thin film device, shown in figs. 11, 16, 17, comprising a magnetic thin film active area 11, 12, or 13 (fig. 11), a first pair of conductive leads 2a, 2b, or 2c on opposing sides of the active layer for driving electrical current across the active area in a first direction, and a pair of lead 3a, 3b, or 3c on opposing sides of the active layer for measuring voltage across the active area in a second direction perpendicular to the first direction (fig. 16). Taguchi further discloses a first write bit line 4 and a second write bit line 5 (fig. 17) electrically isolated from the magnetic bit cell by an insulating layer. See col. 7, line 1-col. 8, line 33.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the invention of Van Dau/Manako so that it would include two write bit lines, as write bit lines 4, 5 taught by Taguchi, in order to better control the magnetization of the magnetic film, thereby a better performance device would be obtained. See col. 7, line 1-col. 8, line 33 of Taguchi.

Regarding to claims 36, and 39-42, Van Dau/Manako/Taguchi discloses the device comprising all of the claimed limitations. See the rejections of claims 17 and 20-23.

### **Conclusion**

10. **THIS ACTION IS MADE FINAL.** A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dao Nguyen whose telephone number is (571)272-1791. The examiner can normally be reached on Monday-Friday 9:00am - 6:00pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Loke, can be reached on (571)272-1657. The fax numbers for all communication(s) is (571)273-8300.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (571)272-1633.

/DAO H NGUYEN/

Primary Examiner, Art Unit 2818

June 10, 2009